

PATENT ABSTRACTS OF JAPAN

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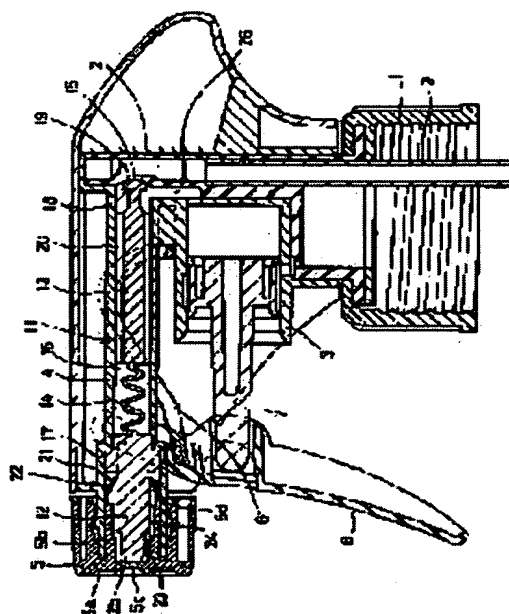
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(54) TRIGGERED LIQUID JETTING DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To simplify the structure of a triggered liq. jetting device by providing a rod-shaped single member engaged into an injection cylinder with the suction valve, delivery valve and nozzle attaching member which have been separately furnished heretofore.

SOLUTION: A rod-shaped member 11 with its front rod 12 and rear rod 13 integrally connected with a compressive spring piece 14 is engaged into an injection cylinder 4, an engaging element 17 projected from the rear of the front rod 12 is fixed to the inner face of the injection cylinder, a suction valve element 18 at the rear end of the rear rod is pressed on a suction valve hole 15 bored in the rear wall of the injection cylinder to constitute a suction valve 19, the periphery of an elastic valve element 21 expanded forward and outward from the middle of the front rod is pressed on the wall face of a liq. passage to form a delivery valve 22, and a liq. discharge path opening and closing mechanism is provided with the outer face of the front of the front rod 12 and the inner cylinder of the nozzle 5 rotatably engaged with the outer face of the front.



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CLAIMS

[Claim(s)]

[Claim 1] The trigger which made the vertical tube stand up from the wearing cylinder which carries out fitting to a top neck part of the bottle object, and made this vertical tube upper part to the injection cylinder hang rockable from a front projection and this injection cylinder anterior part, The point of the plunger which is made to carry out fitting of the 1 half section, and carries out method projection of outside into the cylinder attached to the injection cylinder back lower part is connected. In the trigger type liquid blowout machine whose blowout was enabled from the nozzle which made the liquid in a bottle object hang from the above-mentioned vertical tube by splash actuation of this trigger, and to which it sucked up, and absorbed into the cylinder through the pipe, and fitting of this liquid in a cylinder was carried out to the injection cylinder front end section Into the above-mentioned injection cylinder 4, to one the cylindrical member 11 which carried out connection formation of the before rod part 12 and the after rod part 13 by the compression-spring piece 14 the before rod part 12 Pressure-welding immobilization of the engagement child 17 head which protruded on the radial from the back outside surface is carried out to the barrel wall inner surface of a injection cylinder. And the after rod part 13 By carrying out a pressure welding to the inlet valve hole 15 which drilled the inlet valve object 18 attached to the back end in the above-mentioned injection cylinder posterior wall of stomach, making an inlet valve 19 form, carrying out fitting, and carrying out fitting of the container liner 5b which carried out the back protrusion from nozzle front wall 5a to the anterior part outside surface of the before rod part 12 further The liquid path 16 which opens for free passage the above-mentioned inlet valve hole 15 and nozzle hole 5c drilled in the nozzle front wall 5a core is formed between this cylindrical member outside surface, and the injection cylinder 4 and nozzle container liner 5b. Carry out the pressure welding of the periphery of the elastic valve element 21 of the shape of a skirt board which carried out the extension protrusion from the pars intermedia of the before rod part 12 to the method of the outside of before to a liquid path wall surface, and it considers as a discharge valve 22. Furthermore, the trigger type liquid blowout machine characterized by having made the liquid circulation space between the above-mentioned inlet valve 19 and a discharge valve 22, and the inside of a cylinder open for free passage, and considering as the liquid in-and-out way 26 to a cylinder.

[Claim 2] It forms on one of one side and another side of the first portion of the liquid circulation space between the anterior part peripheral face of the before rod part 12, and the inner surface of a nozzle container liner, the 1st slot 23 which drilled the section in before rod part 12 outside surface in the second half, and the 2nd slot 24 drilled in the container liner inner surface. This liquid circulation space is a trigger type liquid blowout machine according to claim 1 characterized by a free passage and cutoff forming free by rotation of container liner 5b to the before rod part 12.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to a trigger-type liquid blowout machine.

[0002]

[Description of the Prior Art] For example, publication number Trigger which made the vertical tube stand up from the wearing cylinder which carries out fitting to a top neck part of the bottle object, and made this vertical tube upper part to the injection cylinder hang rockable from a front projection and this injection cylinder anterior part as No. 146548 [ten to] shows, The point of the plunger which is made to carry out fitting of the 1 half section, and carries out method projection of outside into the cylinder attached to the injection cylinder back lower part is connected. The liquid in a bottle object is absorbed into a cylinder through the sucking pipe which hung from the above-mentioned vertical tube with the splash of this trigger. And a blowout is made possible from the nozzle which carried out fitting of this liquid in a cylinder to the injection cylinder front end through nozzle junction material, and the nozzle is prepared so that the blowout liquid from a nozzle hole may carry out a high-speed revolution and the rotation location may ** spout possible [closing motion of a liquid discharge passage] as rotatable.

[0003]

[Problem(s) to be Solved by the Invention] Although the above liquid blowout machines prepared the discharge valve, respectively in the vertical tube upper part of the free passage hole upper part with the cylinder which formed the inlet valve in vertical tube pars intermedia and have usually prepared nozzle junction material in the vertical tube lower part at the injection cylinder front end section Thus, since the resistance at the time of liquid runoff increases as preparing according to an individual is troublesome and the distance from a discharge valve to the nozzle hole of the injection cylinder front end becomes long, a liquid blowout pressure falls. Furthermore, the amount of liquids which remains after a liquid blowout in the liquid passage part from the discharge valve to a nozzle hole will increase, and this residual liquid becomes easy to leak as the liquid passage from a discharge valve to a nozzle hole becomes long. Fitting of the cylindrical member equipped with an inlet valve object, a discharge valve object, and nozzle junction is carried out into a injection cylinder, and this invention has it, and removes the above-mentioned conventional fault.

[0004]

[Means for Solving the Problem] The trigger which made the vertical tube stand up from the wearing cylinder which carries out fitting to a top neck part of the bottle object as the 1st means, and made this vertical tube upper part to the injection cylinder hang rockable from a front projection and this injection cylinder anterior part, The point of the plunger which is made to carry out fitting of the 1 half section, and carries out method projection of outside into the cylinder attached to the injection cylinder back lower part is connected. In the trigger type liquid blowout machine whose blowout was enabled from the nozzle which made the liquid in a bottle object hang from the above-mentioned vertical tube by splash actuation of this trigger, and to which it sucked up, and absorbed into the cylinder through the pipe, and fitting of this liquid in a cylinder was carried out to the injection cylinder front end section Into the

above-mentioned injection cylinder 4, to one the cylindrical member 11 which carried out connection formation of the before rod part 12 and the after rod part 13 by the compression-spring piece 14 the before rod part 12 Pressure-welding immobilization of the engagement child 17 head which protruded on the radial from the back outside surface is carried out to the barrel wall inner surface of a injection cylinder. And the after rod part 13 By carrying out a pressure welding to the inlet valve hole 15 which drilled the inlet valve object 18 attached to the back end in the above-mentioned injection cylinder posterior wall of stomach, making an inlet valve 19 form, carrying out fitting, and carrying out fitting of the container liner 5b which carried out the back protrusion from nozzle front wall 5a to the anterior part outside surface of the before rod part 12 further The liquid path 16 which opens for free passage the above-mentioned inlet valve hole 15 and nozzle hole 5c drilled in the nozzle front wall 5a core is formed between this cylindrical member outside surface, and the injection cylinder 4 and nozzle container liner 5b. The pressure welding of the periphery of the elastic valve element 21 of the shape of a skirt board which carried out the extension protrusion from the pars intermedia of the before rod part 12 to the method of the outside of before was carried out to the liquid path wall surface, and it considered as the discharge valve 22, and the liquid circulation space between the above-mentioned inlet valve 19 and a discharge valve 22 and the inside of a cylinder were made to open for free passage further, and it considered as the liquid in-and-out way 26 to a cylinder.

[0005] While having the 1st means of the above, as the 2nd means the first portion of the liquid circulation space between the anterior part peripheral face of the before rod part 12, and the inner surface of a nozzle container liner, and the second half the section It formed on one of one side and another side of the 1st slot 23 drilled in before rod part 12 outside surface, and the 2nd slot 24 drilled in the container liner inner surface, and a free passage and cutoff formed this liquid circulation space free by rotation of container liner 5b to the before rod part 12.

[0006]

[Embodiment of the Invention] It is the wearing cylinder fitting of 1 will be carried out [wearing] to a top neck part of the bottle object if a part for the structured division well-known first conventionally is explained briefly, the vertical tube 2 from this wearing cylinder is stood up, the injection cylinder 4 from a vertical tube upper bed has carried out [cylinder / 3 / from the front face of this vertical tube] front projection again, respectively, and fitting of the nozzle 5 is carried out to the injection cylinder front end. From injection cylinder anterior part, the splash to a cross direction has hung possible, and a trigger 6 connects the plunger 7 front end to which this trigger upper part was made to carry out fitting of the back into a cylinder, and front energization of the trigger is carried out by the flat spring 8. In addition, 9 is the sucking pipe installed from the vertical tube 2 lower part. If it was in this invention, fitting of the cylindrical member 11 made of synthetic resin was carried out into the above-mentioned injection cylinder 4.

[0007] The cylindrical member has connected the before rod part 12 and the after rod part 13 with one by the compression-spring piece 14. Fitting of the container liner 5b which carried out the back protrusion from front wall 5a of the nozzle 5 formed in the anterior part outside surface of the before rod part 12 in the shape of a cap is carried out. Between the inner skin of the outside surface of this cylindrical member, the injection cylinder 4, and the above-mentioned container liner 5b The liquid path 16 which opens for free passage the inlet valve hole 15 drilled in the vertical tube part which forms a injection cylinder posterior wall of stomach, and nozzle hole 5c drilled centering on the nozzle front wall is formed. Moreover, the pressure welding of the heads, such as a projection and it, is acted to a radial as some engagement children 17 from the back outside surface of the front rod part 12 to a injection tubiform hole inner surface, by fixing into a injection cylinder and making the rod part before this fix in this way, the pressure welding of the inlet valve object 18 attached to the back end of the after rod part 13 is carried out by energization of the compression-spring piece 14 to the front face of the previous statement inlet valve hole 15, and the inlet valve 19 is formed. The after [this] rod part was formed in the cross-section cross-joint configuration etc., has arranged the liquid path formation slot 20 lengthwise, and can resist energization of a compression-spring piece, and can move forward, and can retreat by the energization.

[0008] The before rod part 12 is made to extend from the pars intermedia to the method of the outside of before, projects the elastic skirt-board-like valve element 21, carries out the pressure welding of this valve element periphery to a liquid path external wall surface, and forms the discharge valve 22.

Although the pressure welding of the 5d of the light-gage cylinder parts is carried out from the periphery section back end of nozzle container liner 5b to the anterior part internal surface of a injection cylinder and the pressure welding of the above-mentioned elastic valve element periphery is carried out to a projection and its light-gage cylinder part inner surface in the example of a graphic display, the pressure welding of the elastic valve element periphery may be carried out to a injection cylinder internal surface, and a discharge valve may be formed without preparing the light-gage cylinder part.

[0009] The liquid circulation space between the anterior part peripheral face of the before rod part 12 and the inner surface of nozzle container liner 5b The 1st slot 23 which drilled the section in before rod part 12 outside surface in the example of a graphic display its first portion and second half although you could form only in the slot formed in either peripheral faces, such as it, or inner skin, It forms by one one side of the 2nd slot 24 drilled in the container liner 5b inner surface, and both slots, such as it, are made to open for free passage like a graphic display by rotating a nozzle 5, and it makes it possible to make it intercept. Moreover, the liquid circulation space between a front rod part front end side and the rear face of nozzle front wall 5a is formed in either the front end side of a before rod part thru/or a front wall rear face by drilling the well-known spin slot 25. This etc. is formed in the previous statement conventional example like the liquid path section which nozzle junction material and a nozzle formed. In addition, the spin slot is prepared only when using it as a sprayer, and when making the shape of a water gun carry out a liquid blowout, let it be the usual slot.

[0010] The inside of the part from an inlet valve 19 to a discharge valve 22 and a cylinder 3 is made to open for free passage among the liquid paths 16 in the above-mentioned injection cylinder on the liquid in-and-out way 26. In the example of a graphic display, the liquid in-and-out way is formed between the injection cylinder back end and the cylinder back end section. If a trigger is drawn near and carried out from the condition of having made the bottle object carrying out splash actuation of the trigger 6 for the liquid blowout machine considered as the above-mentioned configuration anchoring and several times, and having inhaled the liquid in the cylinder A plunger 7 retreats, and the liquid in a cylinder is pressurized, therefore, goes into the liquid path 16 in a injection cylinder through the liquid in-and-out way 26, passes along a discharge valve 22, and it is spouted from nozzle hole 5c, carrying out a high-speed revolution through the 1st slot 23, the 2nd slot 24, and the spin slot 25 further. If a trigger is detached, in order that a trigger and a plunger 7 may move forward by energization of a flat spring 8 and the inside of a cylinder 3 and the liquid path 16 may negative-pressure-ize, an inlet valve 19 opens, the liquid in a bottle object sucks up, it passes along a pipe 9 and the liquid in-and-out way 26, and a sink is carried out into a cylinder. The liquid in a cylinder can be henceforth spouted from a nozzle hole repeatedly [of trigger actuation], and a liquid sink can be carried out into a cylinder.

[0011]

[Effect of the Invention] Since this invention carries out fitting of the cylindrical member 11 considered as the previous statement configuration into the injection cylinder 4 and forms an inlet valve 19 and a discharge valve 22 Since there is no trouble which forms both valves, such as it, independently into a vertical tube 2 like before, and the pressure welding of the discharge valve 22 is carried out to a liquid path external wall surface and it forms in it the periphery of the elastic valve element 21 attached to the pars intermedia of the before rod part 12 The liquid which distance to nozzle hole 5c of the nozzle to which fitting of this discharge valve was carried out to the injection cylinder front end can be made brief, and can lessen lowering of the liquid pressure therefore spouted from the nozzle hole, therefore remains in from the discharge valve before a nozzle hole after a liquid blowout again can be lessened. Furthermore, on the other hand, either of the first portion of the liquid circulation space between the anterior part peripheral face of the before rod part 12 and the inner surface of nozzle container liner 5b, the 1st slot 23 which drilled the section in the before rod part outside surface in the second half, and the 2nd slot 24 established in the container liner 5b inner surface reaches, and it forms on the other hand. Both slots, such as it, can make unnecessary the nozzle junction material for which a free passage and

cutoff were conventionally used by forming free for the same functional achievement by the rotation of a nozzle container liner to the before rod part 12.

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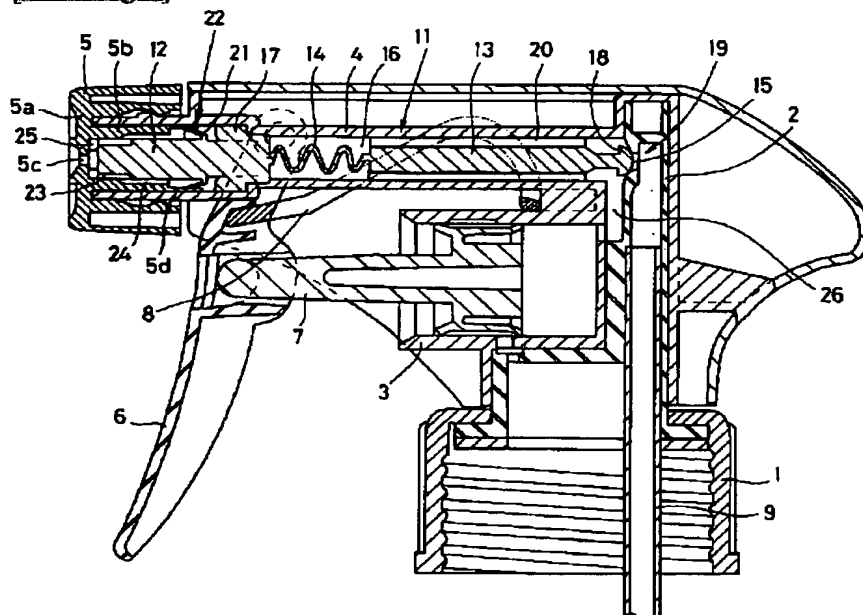
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DRAWINGS

[Drawing 1]



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(19)



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(71) Applicant: **YOSHINO KOGYOSHO CO LTD**

(72) Inventor: **TSUNODA YOSHIYUKI**

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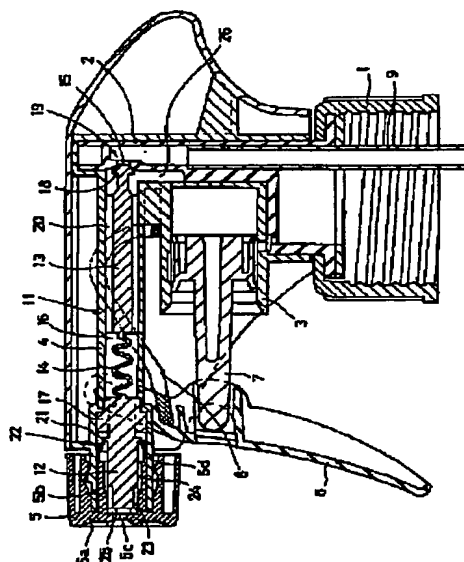
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PROBLEM TO BE SOLVED: To simplify the structure of a triggered liq. jetting device by providing a rod-shaped single member engaged into an injection cylinder with the suction valve, delivery valve and nozzle attaching member which have been separately furnished heretofore.

SOLUTION: A rod-shaped member 11 with its front rod 12 and rear rod 13 integrally connected with a compressive spring piece 14 is engaged into an injection cylinder 4, an engaging element 17 projected from the rear of the front rod 12 is fixed to the inner face of the injection cylinder, a suction valve element 18 at the rear end of the rear rod is pressed on a suction valve hole 15 bored in the rear wall of the injection cylinder to constitute a suction valve 19, the periphery of an elastic valve element 21 expanded forward and outward from the middle of the front rod is pressed on the wall face of a liq. passage to form a delivery valve 22, and a liq. discharge path opening and closing mechanism is provided with the outer

face of the front of the front rod 12 and the inner cylinder of the nozzle 5 rotatably engaged with the outer face of the front.

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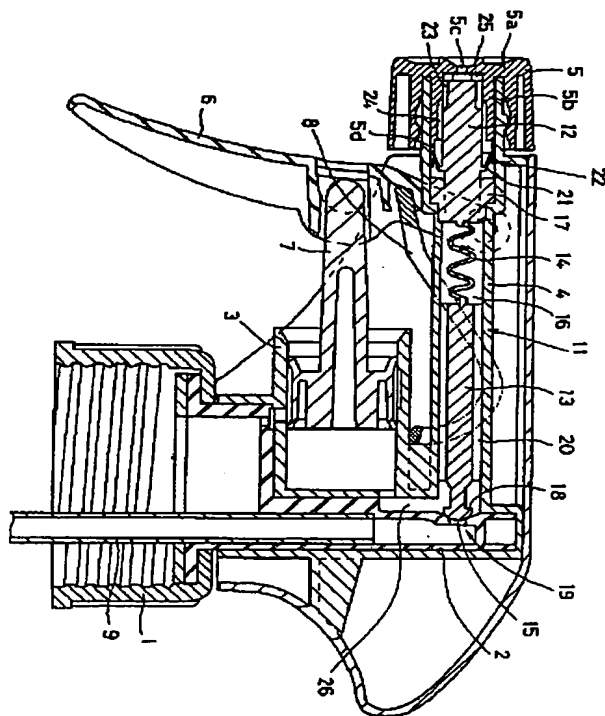
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(54) 【発明の名称】 トリガー式液体噴出器

(57) 【要約】

【課題】 トリガー式液体噴出器において、従来別々に設けられていた吸込み弁、吐出弁、およびノズル取付け部材を射出筒内へ嵌合させた棒状の単独部材に具備させ、構造を簡略化した。

【解決手段】 射出筒4内へ、前棒部12と後棒部13とを圧縮バネ片14で一体に連結した棒状部材11を嵌合させ、前棒部12の後部から突設した係合子17を射出筒内面へ固定し、後棒部後端の吸込み弁体18を射出筒後壁に穿設した吸込み弁孔15に圧接させて吸込み弁19とし、かつ前棒部中間から前外方へ拡張した弾性弁体21外周を液体通路壁面へ圧接させて吐出弁22を形成し、又前棒部12の前部外面と、該前部外面へ回転可能に嵌合させたノズル5の内筒とで、液体吐出路開閉機構を設けた。



【特許請求の範囲】

【請求項 1】 容器体口頸部に嵌合させる装着筒から縦筒を起立させて、該縦筒上部から射出筒を前方突出し、該射出筒前部から揺動可能に垂下させたトリガーと、射出筒後部下方に付設されたシリンダ内へ一半部を嵌合させて外方突出するプランジャの先端部とを連結して、該トリガーの揺動操作で容器体内液体を上記縦筒から垂下させた吸上げパイプを介してシリンダ内へ吸込み、かつ該シリンダ内液体を射出筒前端部へ嵌合させたノズルから噴出可能としたトリガー式液体噴出器において、
10 上記射出筒 4 内へ、前棒部12と後棒部13とを圧縮バネ片14で一体に連結形成した棒状部材11を、前棒部12は、後部外面から放射状に突設した係合子17先端を射出筒の筒壁内面へ圧接固定させて、かつ後棒部13は、後端に付設した吸込み弁体18を上記射出筒後壁に穿設した吸込み弁孔15へ圧接し吸込み弁19を形成させて嵌合させ、更に前棒部12の前部外面へ、ノズル前壁5aから後方突設した内筒5bを嵌合させることで、該棒状部材外面と、射出筒 4 およびノズル内筒5bとの間に、上記吸込み弁孔15とノズル前壁5a中心に穿設したノズル孔5cとを連通する液体通路16を形成し、前棒部12の中間部から前外方へ拉开突設したスカート状の弾性弁体21の外周を液体通路壁面へ圧接させて吐出弁22とし、
20 更に上記吸込み弁19と吐出弁22との間の液体通路部分とシリンダ内とを連通させてシリンダに対する液体出入路26としたことを特徴とするトリガー式液体噴出器。

【請求項 2】 前棒部12の前部外周面とノズル内筒の内面との間の液体通路部分の前半部と後半部とを、前棒部12外面に穿設した第 1 溝部23と内筒内面に穿設した第 2 溝部24とのいずれかの一方と他方とで形成して、
30 該液体通路部分は、前棒部12に対する内筒5bの回転により連通および遮断が自在に形成したことを特徴とする請求項 1 記載のトリガー式液体噴出器。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】 本発明はトリガー式の液体噴出器に関する。

【0002】

【従来の技術】 例えば特開平 10-146548号が示すように、容器体口頸部に嵌合させる装着筒から縦筒を起立させて、該縦筒上部から射出筒を前方突出し、該射出筒前部から揺動可能に垂下させたトリガーと、射出筒後部下方に付設されたシリンダ内へ一半部を嵌合させて外方突出するプランジャの先端部とを連結して、該トリガーの揺動で容器体内液体を上記縦筒から垂下された吸上げパイプを介してシリンダ内へ吸込み、かつ該シリンダ内液体をノズル取付け部材を介して射出筒前端に嵌合させたノズルから噴出可能とし、又そのノズルは回転可能としてその回転位置によって液体吐出路の開閉が可能に、かつノズル孔からの噴出液体は高速回転し乍ら噴出するよ
40

う設けられている。

【0003】

【発明が解決しようとする課題】 上記のような液体噴出器は、通常縦筒下部内に吸込み弁を、縦筒中間部に設けたシリンダとの連通孔上方の縦筒上部内に吐出弁を、それぞれ設け、又射出筒前端部にノズル取付け部材を設けているが、このように個別に設けることは面倒であり、又吐出弁から射出筒前端のノズル孔までの距離が長くなるにつれて液体流出時の抵抗が増大するために液体噴出圧が低下し、更に吐出弁からノズル孔までの液体流路が長くなるにつれて、液体噴出後にその吐出弁からノズル孔までの液体流路部分内に残る液体量が増えることとなり、該残存液体が洩れ易くなる。本発明は、吸込み弁体と吐出弁体とノズル取付け部とを備えた棒状部材を射出筒内へ嵌合させ、もって上記従来の欠点を除去するものである。

【0004】

【課題を解決するための手段】 第 1 の手段として容器体口頸部に嵌合させる装着筒から縦筒を起立させて、該縦筒上部から射出筒を前方突出し、該射出筒前部から揺動可能に垂下させたトリガーと、射出筒後部下方に付設されたシリンダ内へ一半部を嵌合させて外方突出するプランジャの先端部とを連結して、該トリガーの揺動操作で容器体内液体を上記縦筒から垂下させた吸上げパイプを介してシリンダ内へ吸込み、かつ該シリンダ内液体を射出筒前端部へ嵌合させたノズルから噴出可能としたトリガー式液体噴出器において、上記射出筒 4 内へ、前棒部12と後棒部13とを圧縮バネ片14で一体に連結形成した棒状部材11を、前棒部12は、後部外面から放射状に突設した係合子17先端を射出筒の筒壁内面へ圧接固定させて、かつ後棒部13は、後端に付設した吸込み弁体18を上記射出筒後壁に穿設した吸込み弁孔15へ圧接し吸込み弁19を形成させて嵌合させ、更に前棒部12の前部外面へ、ノズル前壁5aから後方突設した内筒5bを嵌合させることで、該棒状部材外面と、射出筒 4 およびノズル内筒5bとの間に、上記吸込み弁孔15とノズル前壁5a中心に穿設したノズル孔5cとを連通する液体通路16を形成し、前棒部12の中間部から前外方へ拉开突設したスカート状の弾性弁体21の外周を液体通路壁面へ圧接させて吐出弁22とし、更に上記吸込み弁19と吐出弁22との間の液体通路部分とシリンダ内とを連通させてシリンダに対する液体出入路26とした。
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【0005】 第 2 の手段として、上記第 1 の手段を有すると共に前棒部12の前部外周面とノズル内筒の内面との間の液体通路部分の前半部と後半部とを、前棒部12外面に穿設した第 1 溝部23と内筒内面に穿設した第 2 溝部24とのいずれかの一方と他方とで形成して、該液体通路部分は、前棒部12に対する内筒5bの回転により連通および遮断が自在に形成した。

【0006】

【発明の実施の形態】まず従来公知の構造部分について簡単に説明すると、1は容器体口頸部に嵌合させる装着筒で、該装着筒からは縦筒2を起立し、該縦筒前面からはシリンダ3が、又縦筒上端からは射出筒4が、それぞれ前方突出させてあり、射出筒前端にはノズル5を嵌合させている。射出筒前部からはトリガー6が前後方向への揺動が可能に垂下されており、該トリガー上部にはシリンダ内へ後部を嵌合させたプランジャ7前端を連結し、又そのトリガーを板バネ8で前方付勢させている。尚9は縦筒2下部から垂設された吸上げパイプである。本発明にあっては、上記射出筒4内へ、合成樹脂製の棒状部材11を嵌合させた。

【0007】棒状部材は、前棒部12と後棒部13とを圧縮バネ片14で一体に連結しており、前棒部12の前部外面へ、キャップ状に形成したノズル5の前壁5aから後方突設した内筒5bを嵌合させ、該棒状部材の外面と射出筒4および上記内筒5bの内周面との間に、射出筒後壁を形成する縦筒部分に穿設した吸込み弁15と、ノズル前壁中心に穿設したノズル孔5cとを連通する液体通路16を形成している。又前棒部12の後部外面から放射状に数個の係合子17を突出し、それ等先端を射出筒孔内面へ圧接させて該前棒部を射出筒内へ固定しており、このように固定させることで、後棒部13の後端に付設した吸込み弁18を既述吸込み弁15の前面へ、圧縮バネ片14の付勢により圧接させて吸込み弁19を形成している。該後棒部は横断面十字形状等に形成して液体通路形成溝20を縦設しており、又圧縮バネ片の付勢に抗して前進し、又その付勢により後退可能である。

【0008】前棒部12はその中間部から前外方へ拡張させてスカート状の弾性弁体21を突出しており、該弁体外周を液体通路外壁面へ圧接させて吐出弁22を形成している。図示例ではノズル内筒5bの外周部後端から薄肉筒部5dを射出筒の前部内壁面へ圧接させて突出し、その薄肉筒部内面へ上記弾性弁体外周を圧接するが、その薄肉筒部を設けなくて、弾性弁体外周を射出筒内壁面へ圧接させて吐出弁を形成してもよい。

【0009】前棒部12の前部外周面とノズル内筒5bの内面との間の液体通路部分は、それ等外周面、又は内周面の一方に形成した溝だけで形成してもよいが、図示例ではその前半部と後半部とを、前棒部12外面に穿設した第1溝部23と、内筒5b内面に穿設した第2溝部24とのいずれかの一方で形成し、ノズル5を回転させることで図示のようにそれ等両溝部を連通させたり、又遮断させることが可能とする。又前棒部前端面とノズル前壁5aの後面との間の液体通路部分は、前棒部の前端面ないし前壁後面のいずれかへ公知のスピン溝25を穿設することで形成する。これ等は既述従来例において、ノズル取付け部材

とノズルとが形成していた液体通路部と同様に形成している。尚そのスピン溝は、噴霧器として使用する場合にはだけ設けるもので、水鉄砲状に液体噴出させる場合は、通常の溝とする。

【0010】上記射出筒内の液体通路16のうち、吸込み弁19から吐出弁22までの部分とシリンダ3内とを液体出入路26で連通させる。図示例では射出筒後端とシリンダ後端部との間にその液体出入路を形成している。上記構成とした液体噴出器を容器体に取り付け、数回トリガー6を揺動操作させてシリンダ内に液体を吸込ませた状態から、トリガーを引寄せると、プランジャ7が後退してシリンダ内液体は加圧され、よって液体出入路26を通過して射出筒内の液体通路16に入り、吐出弁22を通り、更に第1溝部23、第2溝部24、スピン溝25を通過して高速回転しながらノズル孔5cから噴出される。トリガーを離すと板バネ8の付勢によりトリガーおよびプランジャ7が前進し、シリンダ3および液体通路16内が負圧化するため、吸込み弁19が開いて容器体内液体が吸上げパイプ9および液体出入路26を通り、シリンダ内へ吸込みされる。以後トリガー操作の反復によりシリンダ内液体をノズル孔から噴出し、又シリンダ内へ液体吸込みすることが出来る。

【0011】

【発明の効果】本発明は既述構成とした棒状部材11を射出筒4内へ嵌合させて、吸込み弁19と吐出弁22とを形成するから、従来のように縦筒2内へそれ等両弁を別々に形成する面倒がなく、又吐出弁22は前棒部12の中間部に付設した弾性弁体21の外周を液体通路外壁面へ圧接させて形成するから、該吐出弁を射出筒前端へ嵌合させたノズルのノズル孔5cまでの距離を短かくでき、よってそのノズル孔から噴出する液体圧の低下を少くすることが出来る、従って又液体噴出後にその吐出弁からノズル孔までの間に残存する液体を少くすることが出来る。更に前棒部12の前部外周面とノズル内筒5bの内面との間の液体通路部分の前半部と後半部とを、前棒部外面に穿設した第1溝部23と内筒5b内面に設けた第2溝部24とのいずれかの一方および他方で形成して、前棒部12に対するノズル内筒の回転でそれ等両溝部が連通、および遮断が自在に形成することで、同様の機能達成のために従来用いられていたノズル取付け部材を不要とすることが出来る。

【図面の簡単な説明】

【図1】 本発明液体噴出器の断面図である。

【符号の説明】

11…棒状部材	12…前棒部
13…後棒部	14…圧縮バネ片
19…吸込み弁	22…吐出弁
23…第1溝部	24…第2溝部

2

